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LETTER REGARDING REGULATORY REVIEW AND COMMENTS ON FINAL DRAFT  
REMEDIAL INVESTIGATION AND FEASIBILITY STUDY FOR OPERABLE UNIT 3 (OU 3) NAS  
JACKSONVILLE FL  
7/8/1999  
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**UNITED STATES ENVIRONMENTAL PROTECTION AGENCY**  
REGION 4  
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ATLANTA, GEORGIA 30303-8960

**JUL 08 1999**

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Mr. Dana Gaskins  
Southern Division  
Code 1857  
Naval Facilities Engineering Command  
2155 Eagle Drive  
Charleston, S.C. 29411-0068

Subject: Naval Air Station Jacksonville, Florida  
EPA ID# FL6 170 024 412  
Final Draft RI/FS for OU-3

Dear Mr. Gaskins:

EPA has reviewed the **Final Draft Remedial Investigation and Feasibility Study - Operable Unit 3**, NAS Jacksonville, May 1999, HLA. We are transmitting herewith the review comments on the Risk Assessment portion of the RI/FS. Comments on the remainder of the RI/FS will be sent in approximately two weeks.

Please contact me at 404/562-8649 if you have any questions..

Sincerely,

Douglas C. McCurry  
Remedial Project Manager  
Federal Facilities Branch

Enclosure

cc: Jorge Caspary, FDEP  
Tim Curtin, NAS Jacksonville  
Phylissa Miller, HLA  
Hermann Bauer, Bechtel  
Anthony Robinson, SOUTHDIIV

**NAVAL AIR STATION JACKSONVILLE**  
**DRAFT FINAL REMEDIAL INVESTIGATION AND FEASIBILITY STUDY**  
**OPERABLE UNIT 3**  
**Document Dated May 1999**

**General Comments:**

1. Appendix F-3 presents the human health risk characterization for the potential receptors at OU 3. There are several rounding errors that are present throughout this appendix when the cancer risks and hazard indices are summed together. For instance, the hazard index that is listed in Table F-3.9 for the future adult worker is 4. However, when all of the specific hazard indices that are presented in the table are added together the total hazard index is 4.81, which should be rounded to a hazard index of 5 and not 4. This could have occurred because the spreadsheet that calculated cumulative risks and HIs was set up to add a different number of significant figures than was presented in the tables in Appendix F. The text should be reviewed to ensure that the correct cumulative HIs and risks have been reported.
2. Appendix H presents the ecological risk food chain modeling calculations. This reviewer found several slight discrepancies in the presented values that are possibly rounding errors. The use of significant figures in the spreadsheet calculations should be quality checked and corrected as needed.
3. The RBC values used in this document are from the April 1998 version of the EPA Region III RBC table. This table has been updated since that time. The next version of this document should update the COPC screening to compare values to the most current version of the Region III RBC table, which is April 1999.
4. Aquatic organism (e.g. snails) tissue concentrations are calculated in this ecological risk assessment based only on surface water contaminant concentrations. This is likely not an adequate representation of potential tissue concentrations because it does not account for potential uptake of contaminants from sediments. This aquatic organism (e.g. snails) tissue concentration calculation could underestimate the predicted risk for both the gull and the manatee with the larger underestimation occurring for the gull. This potential for underestimation should be discussed in the uncertainty section. This added text in the uncertainty section should explain that aquatic invertebrates could be collected for chemical analysis in order to achieve a tissue concentration that is representative of site conditions.
5. It is premature to dismiss remedial action at the PCS 16 storm water outfall. Another round of toxicity testing should be conducted to validate the conclusion that the severe toxic response observed at station 11 is isolated to a small area.

### Specific Comments:

1. **Section 5.2, Pg 5-4:** This section on persistence and fate of OU 3 contaminants includes a sentence that states, “lead in the sediments pose an ecological risk to aquatic and semi-aquatic receptors as shown in Chapter 7.0.” This statement is not consistent with the conclusions of Chapter 7.0 since risks to semi-aquatic receptors are not predicted.
2. **Section 6.0, Page 6-1, Third Paragraph, Last Sentence:** The text in this section references Appendices F-1 through F-7. It is stated that Appendix F-7 “is a duplication of the tables presented in the text of this section reformatted to comply with the *Risk Assessment Guidance for Superfund, Part D*.” However, Appendix F-7 is not included in this document. Appendix F-7 should be added to the next draft of this document.
3. **Section 6.2, Pg 6-5, First Paragraph:** In the first sentence of the first paragraph, the text states: “CPCs are defined as chemicals for which data of sufficient quality are available for use in the risk assessment, are potentially site related, have maximum detected concentrations above standards or guidelines, have above risk-based screening concentrations, and, for inorganic analytes, have above background screening concentrations.” This sentence does not make sense as it is written. The sentence apparently should read: “CPCs are defined as chemicals for which data of sufficient quality are available for use in the risk assessment, are potentially site related, have maximum detected concentrations above standards or guidelines, have maximum detected concentrations above risk-based screening concentrations, and, for inorganic analytes, have maximum detected concentrations above background screening concentrations.” To avoid confusion, the text should be changed to incorporate these changes.
4. **Section 6.2.2, Pg 6-7, Last Paragraph, Last Sentence:** This section discusses the risk-based screening concentrations and other screening values that will be used in the risk assessment to identify CPCs. The last sentence of this paragraph states that the published Florida SCG for lead is 500 mg/kg (which is the residential FSCG). This is inconsistent with the value for the Florida SCG that is presented in Table 6-1 of 1,000 mg/kg (the industrial FSCG). This inconsistency should be addressed and corrected in the next draft of this document.
5. **Table 6-1, Pg 6-9:** This table shows the selection of human health chemicals of potential concern for subsurface soil. Footnotes for this table were cited at the end of the table on page 6-11. However, no footnotes were included in the text of the table. The table should be revised to include these footnotes.
6. **Table 6-2, Pg 6-12:** This table reportedly shows the selection of human health chemicals of potential concern for groundwater at Area A. The units that are shown in this table appear to be erroneous. The units that are shown for VOCs are µg/kg, and the units

shown for inorganics are mg/kg. The appropriate units for groundwater are typically presented as mg/liter or µg/liter. The information provided should be checked for accuracy and corrected as appropriate.

7. **Table 6-2, Pg 6-12 and Tables F-1-1 and F-1-5, Appendix F:** The RBC value that is given for calcium (1,055,398 mg/kg) is theoretically impossible. This value should read 1,000,000 mg/kg with a footnote indicating that the calculated essential nutrient screening value is above 1,000,000 mg/kg, which indicates that the nutrient would not be present at toxic levels.
8. **Table 6-2, Pg 6-13:** The subtitle at the top of the page incorrectly states that the table shows the CPC selection for subsurface soil. The subtitle should be changed to read: "Unfiltered Groundwater, Area A."
9. **Figure 6-1, Pg 6-34:** This figure displays the complete exposure pathways for the human receptors. The figure the trespasser as a receptor. However, this contradicts the text in Section 6.3.2 (on Page 6-32, last complete paragraph), which states "access to OU 3 is restricted by fence and security guards and is limited to NADEP personnel and authorized visitors. Therefore, a trespasser scenario will also not be considered in this HHRA." This inconsistency in Figure 6-1 should be corrected.
10. **Figure 6-1, Pg 6-34:** The utility workers' dermal exposure to storm water runoff is not shown in Figure 6-1. This is in contradiction to the text on page 6-33 (last bulleted item), which clearly shows that "utility workers exposed to storm sewer water via limited dermal contact" are expected to be a completed pathway. Figure 6-1 should be corrected.
11. **Section 6.3.3, Pg 6-36, First Complete Paragraph:** Section 6.3.3 introduces the methods used for the quantification of exposure. The text states that the parameters used will reflect the most reasonable maximum exposure, and references Appendix F-4 for specific values. However, the parameters for the exposure equations are included in Appendix F-2 and not Appendix F-4. The text should be changed accordingly.
12. **Section 6.3.3, Pg 6-36, Chemical-Related Variable, First Paragraph, Last Sentence:** This section shows the derivation of the exposure point concentration. The text states that "for groundwater outside the designated areas the EPC is the lesser of the maximum and the arithmetic mean of all detected concentrations (nondetects are not considered)." However, a look at Table 6-23 shows that nondetects were used in the derivation of the EPC. This inconsistency should be addressed.
13. **Table 6-2, Pg 6-43:** The exposure point concentrations for surface water are presented in this table. The units shown for inorganics in surface water are mg/kg. The units should be changed to µg/liter.

14. **Section 6.5.3, Pg 6-54, First Paragraph, First Sentence:** The risk characterization results for future groundwater land use are discussed in this section. The first sentence of this page references Tables F-5.3 and F-5.11 in Appendix F-5 for the results. However, the correct reference is Tables F-3.3 through F-3.11 in Appendix F-3. The text should be changed accordingly.
15. **Section 6.6.4, Pg 6-68, Third Paragraph, Last Sentence:** This paragraph discusses the central tendency exposure estimates. The text references Tables F-5.13 through F-5.21 in Appendix F-5 for the results. However, the text should reference Tables F-3.15 through F-3.23 in Appendix F-3.
16. **Table 6-29, Pg 6-71:** A summary of the remedial goal options (RGOs) for groundwater at Area A are presented in this table. The range of detected concentrations for 1,1-dichloroethene is shown as being 1.1 to 3.1 µg/L. However, Table 6-2 on page 6-12 shows the range of detected concentrations as being 1.1 to 31 µg/L. This range of values should be corrected.
17. **Table 6-35, Pg 6-77:** A Summary of remedial goal options for groundwater at Area G are presented in this table. The EPCs that are listed in this table are different than the EPCs that are shown in Table 6-21 on page 6-42. This discrepancy should be corrected.
18. **Section 7.1.1.4, Pg 7-6, First Paragraph, First Sentence:** The sentence that no rare, endangered, or threatened species have been directly observed at OU 3 is misleading since manatee have been observed in the St. Johns River adjacent to OU 3. This discrepancy should be corrected.
19. **Section 7.1.3, Pg 7-11, Third Paragraph:** The text states that in accordance with USEPA Region IV guidance 1991, an inorganic analyte was not selected as an ECPC if the maximum detected concentration was less than two times the average detected inorganic concentration in background samples. Please note that this is not consistent with current USEPA Region IV guidance on ecological risk assessment. Comparison of detected concentrations to background inorganic concentrations should not be done as part of the screening level ecological risk assessment, but can be done as part of the baseline risk assessment problem formulation. A comparison of the maximum detected chemical concentrations per media to EPA Region IV ecological screening values is the only comparison that should be performed in the screening level ecological risk assessment.
20. **Table 7-3, Pg 7-13:** This table presents the comparison of surface water maximum detected concentrations to USEPA Region IV screening values. The table indicates that a freshwater surface water screening value is not available for chloromethane; however a value of 5500 ug/L is available. The maximum detected concentration is below the screening value so chloromethane does not need to be retained as a contaminant of

potential ecological concern. Please revise Table 7-3.

21. **Table 7-8, Pg 7-25:** This table presents the ecological food chain modeling equations. The equation for the “total exposure related to surface water and sediment” does not include ingestion of aquatic vegetation. Please revise the presented equation to be consistent with the modeling calculations presented in Appendix H. The calculation of the sediment ingestion rate should be presented on the table. Also, the notes on the table are not consistent with the equations presented. Please revise to eliminate extraneous information and to provide additional information specific to the presented ecological equations. For example, the predicted dietary exposure (PDE), site foraging frequency (SFF) and the exposure duration (ED) are not defined in the table.
22. **Table 7-7, Pg 7-24, footnote h:** Table 7-7 presents exposure parameters for the manatee. The table indicates that it is assumed that manatees do not ingest surface water but they “get water from the plants they ingest”. No supporting documentation is provided for this assumption. Since the St. John’s River in the proximity of OU 3 has a salinity range that is closer to freshwater than brackish water, this assumption seems unfounded.
23. **Table 7-7, Pg 7-24:** The exposure duration and site foraging frequency should be provided for both of the exposure models. Only an exposure duration of 1 representing year round use of OU 3 is presented in Table 7-7 even though Table H-17 presents a less conservative exposure duration used in the “more realistic” model. Please present the exposure duration and site foraging frequency for both the 100% exposure model and the “more realistic” model.
24. **Table 7-7, Pg 7-24, footnote b:** While the Herring Gull estimated diet information is in the Wildlife Exposure Factors Handbook, information on the West Indian Manatee is not provided. Please clarify footnote b since it specifies the Wildlife Exposure Factors Handbook as the source of the assumed diet percentages for the West Indian Manatee.
25. **Section 7.1.5, Pg 7-27:** The last paragraph on page 7-27 indicates that a conversation with a pathologist from the FDEP supported the use of data from other mammals to derive RTVs for the manatee; however, the quote presented only supports that bioconcentration or bioaccumulation of contaminants in manatee tissue generally has not been a problem. The quoted statement does not support the validity of the toxicity values used in this ecological risk assessment. The text should be clarified.
26. **Table 7-9, Pg 7-30:** Table 7-9 presents a summary of hazard indices calculated for the manatee and the herring gull. Footnote 2 states, “The HIs are based on conservative exposure parameters for the manatee.” The footnote should be revised to better reflect the HI. It should indicate the HI was calculated assuming that the ecological receptor forages 100% of the time at a location with the maximum detected concentrations of each of the contaminants of potential ecological concern. Footnotes 2 and 3 are in column headings

that provide both the manatee and the herring gull HIs; therefore, the footnote should address both the manatee and the herring gull.

27. **Section 7.2.6 Pg. 7-77:** The baseline ecological risk assessment summary states that the source of the lead in the sediments is unknown. Lead was detected at elevated concentrations from residue collected from the storm sewer; therefore, it is plausible that the elevated concentrations of lead in the sediment near the PSC 16 storm sewer outfall is site related. The statement on page 7-77 should be modified accordingly.
28. **Appendix B:** This appendix presents the sediment toxicity test data, including the sediment toxicity laboratory data sheets. Unfortunately salinity and ammonia concentrations were not measured. It was agreed by the RPMs in the September 9, 1998 partnering meeting that Test Method 100.4, 10-d Survival test for sediments using *Leptocheirus plumulosus* would be the sediment toxicity test. Test Method 100.4 states that salinity, DO and pH of the overlying water should be measured daily in at least one test chamber per treatment, and at a minimum, they must be measured in every test chamber at the beginning and the end of a test. Although a column for the salinity data is included on the sediment toxicity laboratory data sheets, the salinity data are not filled in. Test Method 100.4 states that ammonia must be measured in overlying water towards the beginning and towards the end of a test. Although a column for ammonia data is included on the sediment toxicity laboratory data sheets, the ammonia data are not filled in. This omission of ammonia monitoring introduces uncertainty into the conclusion that the zero percent survival at station 11 was solely due to exposure to contaminants within the sediment. Ammonia toxicity can contribute to mortality in sediment toxicity tests; therefore, any future performance of sediment toxicity tests should monitor ammonia.
29. **Table F-1.3, Appendix F-1:** The parameters for the essential nutrient screening values are presented in this table. The units for the cancer slope factor are shown as mg/kg-day. The units should be corrected to read (mg/kg-day)<sup>-1</sup>.
30. **Table F-3.1, Appendix F-3:** The risk characterization to the adult recreational user are summarized in this table. The units for the thallium surface water concentration of mg/kg are incorrect. The units should be changed to µg/liter.
31. **Table F-3.3, Appendix F-3:** This table presents the risk characterization for the future adult worker at ALAAP Area A. However the table is not labeled as Area A. For the sake of clarity, the table should be changed.
32. **Tables F-5.1-F-5.6, Appendix F-5:** The tables in this appendix present the dose-response data for both carcinogenic and non-carcinogenic effects. Throughout all of these tables, pyrene is given a "chemical group" classification of B. However, this chemical group is not explained in the notes of the tables. It is assumed that the "B" refers to the EPA carcinogenic classification. Please clarify.



33. **Table H-1, Appendix H:** Table H-1 is entitled “species commonly found in habitats observed at NAS Jacksonville”. The table includes species for Pine Flatwoods Community, Old Field Community, Perimeter Ditch and Bank Community, and the St Johns River Estuarine Community. There is not a Pine Flatwoods Community within OU 3. Since the table could be misinterpreted, it would be beneficial if the presentation of this community were deleted or a footnote were added to specify that the community is not present within OU 3.
34. **Appendix H-2 References:** Page 7-11 of the report cites USEPA 1991b but a reference for this citation is not included in the reference appendix. Please add. Also, please confirm that other USEPA Region IV guidance cited in the risk assessment is included in the references.
35. **Table H-8, Appendix H:** Table H-8 presents a summary of bioaccumulation (BAF) and bioconcentration (BCF) factors. According to footnote f, the BAFs presented for the PAHs are the average of the earthworm BAFs presented in Beyer 1990. Since Beyer 1990 provides data, from Marquerie et al 1987, to derive PAH specific BAFs, it is unclear why added uncertainty is introduced by averaging the data to derive an average BAF. Since PAHs are a concern at the outfall, it would be best to derive PAH specific BAFs. However, since the magnitude of change in BAFs is unlikely to alter the conclusion of the ecological risk assessment, these values do not need to be recalculated for this report.
36. **Table H-14, Appendix H:** Either Table H-14 or Table H-15 should present the sediment exposure dose, plant tissue ingestion dose, invertebrate ingestion dose, and aquatic organism ingestion dose. These doses do not appear to be presented in Appendix H. For transparency of the ecological risk assessment, please provide the calculated sediment exposure dose, plant tissue ingestion dose, invertebrate ingestion dose, and aquatic organism ingestion dose.
37. **Tables H-15 - H-19, Appendix H:** To be consistent with Table 7-8 and to use a more accepted term, Table H-15 and the other tables should state potential dietary exposure (PDE) instead of “total body dose”(TBD).
38. **Tables H-18 - H-19, Appendix H:** The title of these tables should indicate that they represent food chain modeling using site foraging frequency and migration exposure parameters. Also, the title states that the tables represent exposure via ingestion of food, water and sediment. This is not accurate for the manatee calculations since no water ingestion is included in the model. The title should be revised.
39. **Table I-6, Appendix I-1:** The first page of Table I-6 seems to be missing from this draft. This page should be included in the next draft.